

# D.L. MARRIN

Dr. Marrin (nickname West) is an applied scientist in the fields of biogeochemistry, pollutant dynamics, water resources, and aquatic ecology. He has developed analytical and interpretive techniques to assess the biodegradation and partitioning of contaminants in aquifers, soils, surface waters and sediments, as well as to detect wastewater impacts on coastal marine ecosystems. His lectures focus on global water quality issues, water footprints, hydromimicry, the water-energy-food nexus, and perceptual challenges to communicating science. He maintains a multi-faceted water consultancy and served as an adjunct professor at San Diego State University. His clients include environmental firms, corporations, public health agencies and NGOs.

## EDUCATION

*Ph.D.*, Water Resources (hydrochemistry); The University of Arizona.

*M.S.*, Environmental Science (fisheries/limnology); University of California, Berkeley.

*B.S.*, Biological Sciences (marine ecology/biochemistry); University of California, Irvine.

*Cert.*, Wastewater Treatment (CSUS); Nutrition/Wellness (AFPA). *C.E.*, Neuroscience (NSA).

## RECENT POSITIONS

*Consulting Scientist* (California/Hawaii-based); 1999-present.

Working with corporations, public agencies, NGOs and environmental firms on projects involving the analysis and behavior of aqueous pollutants and the chemistry of potable waters. Assisting clients with education and R&D programs related to water-energy-food and to water technologies and perceptions.

*Associate Founder*, Fundación Somos Agua (México DF/Yucatán Península); 2008-2015.

Designed projects addressing water issues that emphasized technical simplicity, practicality, hydromimicry, watershed compatibility, sustainability, and collaborations among artists, designers, scientists and architects.

*Research Scientist & Writer* (Kauai, HI); 1999-2008.

Investigated diverse water-related disciplines (e.g., biogeochemistry, hydrology, systems theory, ancient perspectives, non-scientific research), authored several books, and consulted on local ocean/water issues.

*Adjunct Professor*, San Diego State University; 1988-1999.

Taught graduate courses (hydrochemistry, biogeochemistry) and served on thesis committees in the SDSU Geosciences Department. Also lectured in science and health courses for the UC San Diego Extension.

*Principal*, Institutio Scientiae (Los Angeles, CA/Washington, DC); 1995-1999.

Co-organized a small group that presented scientific concepts and issues to non-technical audiences (e.g., stakeholders, students, managers, decision-makers) in readily accessible and understandable formats.

*President*, InterPhase Environmental (San Diego, CA); 1988-1995.

Founded an applied research firm that specialized in detecting volatile organic pollutants, validating in-situ remediation and biodegradation processes, and measuring the in-situ production of greenhouse gases.

## SELECTED PROJECTS

- Projecting the contribution of greenhouse gases to the atmosphere from the aerobic and anaerobic biodegradation of organic pollutants in shallow soils and aquifers.
- Critiquing the application of remedial technologies for contaminated surface and ground waters.
- Utilizing natural and anthropogenic tracers to evaluate the locations of saline water intrusion into coastal aquifers and the submarine discharge of groundwater from coastal aquifers to nearshore seawater.
- Assessing the potential impacts of chemical and thermal pollution on marine/freshwater fishes.

- Evaluating the biochemistry, treatment and prevention of biofilms within water distribution systems.
- Providing litigation support on cases involving water pollution/remediation and resource allocation.
- Using footprint and life cycle analyses to assess the demands of food and energy on water resources.
- Documenting the production rates, chemical variability, microbial status, treatment options, probable recharge zones and regulatory requirements for mountain spring waters.
- Estimating the water requirements and potential impacts of selected alternative energies and proposed geoen지니어ing technologies on local water resources and cycles.
- Evaluating the quality of potable waters generated by desalination, water-from-air, and fog harvesting.
- Applying systems and information science approaches (including emergence, connectivity, complexity) to generally describe and specifically identify changes in watersheds and aquatic ecosystems.
- Exploring the use of pattern recognition, interpretation and projection techniques to perceive and effectively communicate water quality issues to people with diverse backgrounds.
- Serving as a scientific advisor to artists focused on worldwide ocean and freshwater issues and to R&D programs or ventures focused on the water technology/management sector.

### **RECENT PUBLICATIONS**

2019. Natural resource constraints on the food system. *In: Environmental Nutrition*, Elsevier (Chapter 4).
2019. Emergent properties of water resources and associated watershed systems. *MDPI Proceedings 48*: 18.
2019. Water footprint of meat analogs: selected indicators according to life cycle assessment (w/U. Fresán et al.). *Water 11(4)*: 728.
2018. *A Global Compendium on Water Quality Guidelines* (w/H. Bond et al.). International Water Resources Association (155 pp).
2018. Perspectives on altering our perceptions of water. *Interalia Magazine (September issue)*, 9 pp.
2017. Pattern-based approaches to evaluating water quality. *MDPI Proceedings 2*: 176.
2017. The commonality of patterns. *SciArt Magazine (STEAM feature article)*, 4 pp.
2016. Using water footprints to identify alternatives for conserving local water resources in California. *Water 8(11)*: 497.
2014. Reducing water and energy footprints via dietary changes among consumers. *International Journal of Nutrition and Food Sciences 3(5)*: 361.
2014. Functional art and water science. *SciArt Magazine (June issue)*, p.34.
2012. Water, fractals & watershed processes. *In: Environmental Landscape Sustainability*, Sousse Univ. (p 161).
2010. Hydromimicry: water as a model for technology and management. *Energy Bulletin (August issue)*: 9 pp.
2010. *Hydromimicry: Strategies for a Water Planet*. Water Sciences & Insights (72 pp).
2010. Perspectives on the relationship between water and carbon. *American Institute of Physics 1251*: 12.
2006. *Altered Perceptions: Addressing the Real Water Crises*, Unlimited Publ. (149 pp).
2002. *Universal Water: The Ancient Wisdom and Scientific Theory of Water*, Inner Ocean Publ. (341 pp).
2000. Potential atmospheric contribution of methane from fractured bedrock aquifers. *EOS 81(26)*: 290.
1999. C<sub>2</sub> and C<sub>3</sub> hydrocarbon gases associated with highly reducing (redox) conditions in groundwater (w/J. Adriano). *Biogeochemistry 47(1)*: 15.